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UNMANNED AERIAL VEHICLES (UAVS) FOR SPECIAL OPERATIONS FORCES

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Abstract: The developing of the computation technology and of the nanotechnology goes to the realizing of the nano robots, first of all with military implications. Today, the technology of the "intelligent" weapons which will not let the enemy any place where could hide; start to be a usual thing in conflicts. On the battle field we find innovating weapons with term detection, G.P.S., or laser, weapons which shoot after the corner or in the most perfect hunting planes supersonics in the word.

The paper invites at an incursion in the world of the military technologies performances. We explore the science and the technology which is used for the fabrication of the most intelligent guns.

It is well known the fact that the technique, indifferent by the ulterior application field {medicine, industry, etc} serves first of all military interests. Two examples in this case are:

- ***The computer*** – which before to be a very liked instrument and sometimes absolutely necessary, it was made and used to realized different military tasks;
- ***The surgical*** last hour technology – Leonardo DaVinci surgical robot was made to operate the soldiers at long distances being in the theatres operations;

The robot is one of the concepts, taken from the "civil" life which suffers a continued transformation to answer at the needs army.

The idea of creating a tin man, who has to serve the biological man, came to Karl Capek, writer and scenarist, who put into practice his idea in a play which wrote history. In the play "Rossum's Universal Robots' defines that robot construction (robotka-sclave), notion taken and used until today at the description of the devices which replace the man.

Although as a study discipline, the robotics is enough fragile, it existed in the ancient time a real preoccupation of the man to mechanization. automatization and after that mobilization of different constructions, in order to relieve the living.

One of the essential objectives of the robotization is the realizing of the independent robots. This kind of robots could accept a natural description-formal- {at a high level} of the fulfilled tasks and the execution of the commands without other human interventions. The necessary descriptions will specify what the user wants is and not how to execute the commands. The robots which are capable to realize these tasks will be mechanic devices equipped with perception sensors of the medium, being under the control of a calculation system.

The orientation in an unknown medium, using sensors to detect the impediments and communication with a computer at a distance are two important aspects which have to be taking into account when we work with a movable robot.

Without sensors, the robots could not execute anything else only fix tasks, repeating the tasks which have to realize again and again, but having sensors, the robots have the possibility to make more than this.

In the case of a distributed automatic robot system, the spatial positions are of an extreme importance and of them depend the fulfilling of the whole system. In other words, the robot has to be capable to plan his movements, to decide what movements to execute in order to fulfill a task, conform the actual arrangement of the objects in the working space.

The developing of the computation technology and of the nanotechnology goes to the realizing of the nano robots, first of all with military implications.

The new technology was made to attend the servicemen in urban tasks offering the best solutions with minimal damages.

A military technology come from the reality of our lives is of **the drones** for supervising.

If the Second World War dedicated the mechanized guns, being the tank, the star of the land battles, the next big conflagration of the 21 century could be the robotized weapons.

The conflicts from Yugoslavia (1999), Afghanistan (2001-2002) and Iraq (1991 and 2003) demonstrated that the actual wars are technological and informational confrontations, in which the supremacy of the last generation and the artificial intelligence has a decisive role in the military confrontation.

Today, the technology of the “intelligent” weapons which will not let the enemy any place where could hide; start to be a usual thing in conflicts. On the battle field we find innovating weapons with term detection, G.P.S., or laser, weapons which shoot after the corner or in the most perfect hunting planes supersonics in the word.

The war from 1991 from Golf was the first conflict in which the information technologies, invisible planes and intelligent ammunition started to be used as forced multiplier.

All kind of intelligent ammunition (cruise rocket, multisensor ammunition, the rocket with guiding through optic fiber, the ammunition “loiterer” type with semi active guiding through laser or the intelligent bomb of thrower etc.) will increase the power of stroking.

After the recent war from Iraq which can be appreciate as being the first major confrontation from the informatics era, the intelligent war, the informational war, the limited war, being surgical and based on the dominant IT, will be the basic confrontation in future.

This will be integrated, using intelligent technologies, perfect information sensors, command and control systems, on a horizontal network support, very complex – on the telephonic network to the internet, in which all the system elements have access at information and decision in a real time or even with anticipation.

The collaboration man-machine was tested, in war conditions and imposed aerial vehicles without pilot (UAVs-Unmanned Aerial Vehicles) being the ideal partner of the infantry units.

The year 2007 brought a veritable ‘revolution’ concerning the UAV using in Iraq. Although their number increased from1000 to

1.350 the all hours of flying in the battles against the Iraq of this UAV increased from60.000 to 140.000.

If until now their mission was limited at gathering the information and being a communication relay in inaccessible zones, from this year the USA army experiments the transformation of an UAV in 'platform for weapons'- especially for guided bombs and rockets through laser, which should touch the targets with a precision of a meter.

The advantages of this kind of UAVs consist in the fact that excludes totally the risk of murder or capturing of a pilot, can fly interruptedly 7-21 hours, can stay in the air exact the coordinates send from the land {altitude variations can not be avoid by the most experimented helicopter pilot} but also to resist at gravitation forces by 15-20G, for which any airplane with a man at the board can not be planned.

More, if the operation of an F-18 needs 20-25 hours between missions, and a F-14 needs 40 hours, in the case of a UAV the time is reduced at, and the maintenance equip from the land is more reduced.

An UAV (or "drone") transmits non stop data about the battle field and executes the received commands with precision and rapidity. Beyond the fire for the infantry, an UAV identifies and follows targets, evaluates the damages, replaces the communication centers from the land, and even have sensors which can warn the existence of chemical and biological agents.

The drones were modified thus to imitate insects like: bees, dragon flies, midges, very difficult to identify like possible enemies and very dynamic.

After seven years of hard work {and generous funding from the USA military}, researches from Harvard University have successfully developed a life seized robotic fly. Apparently, these robots flies will by used in military surveillance operations. Each robotic fly uses lightweight carbon joints that are capable of mimicking the exact movements of a real fly, featuring wings that flap to the tune of 110 beats per second. With a wingspan of 3 cm though, it might look a tad suspicious, I wonder whether it will be capable of evading the dreaded fly-swatter when remotely controlled.

The new drones are known in the specialty literature as Autonomous **insect cyborg sentinels**.

The insects Cyborg sentinels combines nanosystems technology, taking everything what is good from the biological system and combines with the nanosystems technique.

The insects can fly two weeks without to stop, have a dynamic ability very well developed in millions of years of evolutions.

The insects Cyborg Sentinels, equipped with the technology of last generation can be used in espionage, capturing of information from places accessible to the man.

Nowadays, the "drone" seems to be a privileged instrument in order to provoke massacres in a living place and to initiate attacks, because easy to adapt they can become weapons which can kill.

The principal problem of the military robots is that they can not distinguish yet between the civilians and combatants. The American legislation forbidden the possibility that robots to take alone decisions or to activate a bomb, the drones being limited at the

capacity of repairing the target which must to be destroyed. In order to resolve the moral issues of using the autonomous weapons, the American army is doing researches in the artificial intelligence field, to equip the robots with 'consciousnesses. It is very important to not lose the control upon the robots, thus the S.F. in which the robots lead us and hunt us to not become reality.

The forces categories, in the future war, will relay not as entities but as administrative and professional possibilities of preparing a force developed in theatre.

REFERENCES

[1] www.go4it.ro
[2] www.ziua.net
[3] www.ubergizmo.com
[4] www.gandul.info/stiinta-tehnologia/
[5] www.tacticalwarfightergear.com